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Homeland Security and Counterterrorism Research and Development: Funding, Organization, and Oversight

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Summary

After the 2001 terrorist attacks, planning and coordination mechanisms for research and development (R&D) to counter terrorism were developed in the White House's Office of Homeland Security, Office of Science and Technology Policy, and in individual agencies. Subsequently, P.L. 107-296, the Homeland Security Act consolidated some R&D and coordination in the Department of Homeland Security (DHS). FY2004 DHS R&D funding was increased above the requested level in House floor action and in Senate Appropriations Committee action. FY2003 funding was appropriated in P.L. 107-8. Policy issues include implementation; coordination of priority-setting among DHS, other agencies, and existing R&D coordination bodies; and appropriations. This report will be updated.

Funding for Federal Counterterrorism R&D

Federal funding for counterterrorism R&D has increased substantially in the last three years. The President's Office of Science and Technology (OSTP) estimated the FY2004 budget request for all federal R&D to combat terrorism at \$3.2 billion,¹ about 6 times the FY2000 amount. The new Department of Homeland Security will manage about one-third of this budget. According to the Office of Management and Budget's (OMB) *Annual Report to Congress on Combating Terrorism, FY2002*, 5.5% of the FY2003 budget request for combating terrorism was for R&D. **See Table 1.**

¹ See [<http://www.ostp.gov/html/budget/2004/2004.html>]. See also CRS Report RL31576, *Federal Research and Development Organization, Policy, and Funding for Counterterrorism*; and CRS Report RL31354, *Possible Impacts of Major Counter Terrorism Security Actions on Research, Development, and Higher Education*. For additional information about DHS, see *Research and Development in the Department of Homeland Security*, CRS Report RL31914 and *Department of Homeland Security: Issues Concerning the Establishment of Federally Funded Research and Development Centers (FFRDCs)*, CRS Report RS21542.

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Table 1. Research and Development (R&D) to Combat Terrorism, By Agency, FY2000-FY2003 (Request), Dollars in Millions

Agency	FY2000 Actual	FY2001 Actual	FY2002 Enacted	Emergency Response Fund, FY2002*	FY2003 Request
Agriculture (USDA)	\$37.3	\$51.7	\$83.9	\$91.3	\$48.4
Commerce (DOC)	9.6	0	6.3	0	20.0
Energy (DOE)	59.7	66.2	64.9	19.0	99.8
Environmental Protection Agency (EPA)	unavailable	0	2.8	1.5	75.0
Health and Human Services (DHHS)	109.7	102.8	119.1	180.0	1,771.1 (NIH, \$1.75B; CDC, \$40.0M; FDA, \$50.0M)
Justice (DOJ)	45.2	11.4	66.1	0	36.1
National Science Foundation	unavailable	7.0	7.0	0	27.0
National Security	190.0	298.9	385.5	11.0	767.2
Transportation (DOT)	50.7	50.2	58.3	64.0	59.3
Treasury	2.1	1.2	1.1	0	1.1
Total	\$511.3	\$589.4	\$795.2	\$366.8	\$2,905.2

Sources: OMB, *Annual Report to Congress on Combating Terrorism, FY2001*, p. 27 for column labeled FY2000. The rest of the data is from the FY2002 OMB report, op. cit., p. 26.

*Funds were included in the FY2002 emergency supplemental appropriations law, P.L. 107-38

The FY2003 request for R&D to combat terrorism was described in OMB's FY2002 terrorism report and is summarized below, beginning with the largest programs. The *Department of Health and Human Services (DHHS)*, with 60% of the total, manages most of the federal civilian effort against bioterrorism. The FY2003 request for *national security* R&D, at 26% of the total, was largely for the *Department of Defense (DOD)*, including the Defense Advanced Research Projects Agency (DARPA). The *Department of Energy's (DOE)* counterterrorism R&D includes work on security, materials, detection of toxic agents, genomic sequencing, DNA-based diagnostics, and microfabrication technologies. The *Environmental Protection Agency (EPA)* focuses on toxic materials research. The *Department of Agriculture's (USDA)* R&D focuses on plant and animal diseases. In the *Commerce Department*, R&D at the National Institute of Standards and Technology (NIST) deals with protecting information systems. The *Technical Support Working Group (TSWG)*, a State Department/DOD group, coordinates interagency work on new technologies to combat terrorism (funding requested at \$49 million).

Creation of a Department of Homeland Security and Other Laws

The Homeland Security Act of 2002, P.L. 107-296, November 25, 2002, created the Department of Homeland Security (DHS), and, as one of its four directorates, a Directorate on Science and Technology. Pursuant to P.L. 107-296, most of DHS's research, development, test, and evaluation (RDT&E) is under jurisdiction of the Under Secretary for Science and Technology (S&T), created by Title III. Dr. Charles McQueary, an engineer, recently retired as President of General Dynamics Advanced Technology Systems, was confirmed on March 19, 2003, to this position. Among his responsibilities are to: coordinate DHS's S&T missions; in consultation with other agencies, develop a strategic plan for federal civilian countermeasures to threats, including research; except for human health-related R&D, conduct and coordinate DHS's intramural and extramural R&D and coordinate with other federal agencies to carry out DHS R&D; establish

national R&D priorities to prevent importation of chemical, biological, radiological, nuclear and related weapons and terrorist attacks; collaborate with DOE regarding using national laboratories; collaborate with the Secretaries of Agriculture and of Health and Human Services to identify “select agents,” but not to assume their responsibilities to enforce “select agent” rules; develop guidelines to disseminate DHS’s research and transfer technology; and support U.S. S&T leadership. The law authorized a 20-member Homeland Security Science and Technology Advisory Committee to advise and recommend research. Members are to include representatives of emergency first-responders, citizen groups, economically disadvantaged communities, and experts in emergency response, research, engineering, business, and management. To the extent possible, DHS’s research is to be unclassified.

Title III transferred to DHS DOE programs in chemical and biological security R&D; nuclear smuggling and proliferation detection; nuclear assessment and materials protection; biological and environmental research related to microbial pathogens; the Environmental Measurements Laboratory; and the advanced scientific computing research program from Lawrence Livermore National Laboratory. DHS was mandated to incorporate a newly created National Bio-Weapons Defense Analysis Center and USDA’s Plum Island Animal Disease Center, but USDA may continue to conduct R&D at the facility. DHS has responsibility for Coast Guard and Transportation Security Administration (TSA) R&D. The DHS Secretary is to collaborate with the DHHS Secretary in setting priorities for DHHS’s human health-related R&D on “countermeasures for chemical, biological, radiological, and nuclear and other emerging terrorist threats.”

Analysis and evaluation units were authorized in DHS. Pursuant to Title III, the Under Secretary may establish or contract with one or more Federally Funded R&D Centers (FFRDC) for independent analysis of homeland security issues. A Homeland Security Advanced Research Projects Agency (HSARPA) will administer an Acceleration Fund, to support innovative homeland security RDT&E in businesses, FFRDCs, and universities. Extramural funding is to be competitive and merit-reviewed, but distributed to as many U.S. areas as practicable. One or more university-based centers for homeland security is to be established. Regarding intramural R&D, the Under Secretary may use any federal laboratory and may establish a headquarters laboratory to “network” federal laboratories. A Homeland Security Institute FFRDC was authorized to: conduct risk analysis and policy research to determine vulnerabilities of, and alternative security approaches for, critical infrastructures; improve interoperability of tools for field operators and first responders; and test prototype technologies. The Institute may use the National Infrastructure Simulation and Analysis Center (NISAC), which was transferred from DOE. A Technology Clearinghouse was authorized to transfer information about innovative solutions for homeland security and will coordinate with TSWG.

Among the functions of the Special Assistant to the Secretary, created by Sec. 102 of P.L. 107-296 is working with the private sector to develop innovative technologies for homeland security. The DHS Secretary, with the National Security Council and OSTP, is to establish uniform procedures to handle critical infrastructure information that is voluntarily submitted to the Government in good faith that will not be subject to disclosure under the Freedom of Information Act. DHS issued a proposed rule on this (see *Federal Register*, Apr. 15, 2003, pp. 18524 -18529). P.L. 107-296 codified an existing Office of Science and Technology in the National Institute of Justice and authorized local technology centers to support training and RDT&E for equipment (Sec.

232 and 235). The DHS Secretary was given special acquisitions authority for basic, applied, and advanced R&D (Sec. 833). Sec. 1003 authorized NIST to conduct R&D on improving information security. The DHS Under Secretary for Information Analysis and Infrastructure Protection was authorized to establish a “NET Guard,” comprised of S&T volunteers, to assist in recovery from attacks on information systems (Sec. 224). OSTP’s Director was mandated to report to Congress on effects of changes in visa procedures on the issuance of student visas (Sec. 428). According to Sec. 1712, OSTP’s Director is to advise the President on homeland security, and to consult and cooperate with the Office of Homeland Security (OHS). (See below for information about OHS.)

P.L. 107-305, “The Cyber Security Research and Development Act,” (H.R. 3394), authorized \$903 million over five years for new research and training programs by the National Science Foundation and NIST to prevent and combat terrorist attacks on private and government computers. The House Science Committee held a hearing on May 14, 2003 on cybersecurity R&D.

DHS estimated FY2003 R&D funding at \$761 million. FY2004 requested funding totaled \$907 million, with \$803 million for the S&T directorate. According to the budget request, 5% of DHS R&D funding would be for basic research, 13% for applied research, 66% for development, and 16% for facilities and equipment. R&D funding for programs transferred from other agencies was estimated at about \$200 million. **See Table 2.** The House voted to approve FY 2004 appropriations for DHS R&D at almost \$1.1 billion; the Senate Appropriations committee approved appropriations at about \$1 billion. Funding for the Homeland Security Advanced Research Projects Agency (HSARPA) funding was requested at \$350 million. This funding would come from other program elements and was not specified in report language.

Coordination Mechanisms Created Before Authorization of DHS

The Office of Science and Technology Policy (OSTP) is a statutory office in the Executive Office of the President (EOP); its Director advises the President and recommends federal R&D budgets. OSTP’s Director has chaired the National Security Council’s Preparedness Against Weapons of Mass Destruction R&D Subgroup (comprised of 16 agencies), which helps plan R&D relating to chemical, biological, nuclear, and radiological threats. OSTP provides technical support to the DHS and manages the interagency National Science and Technology Council (NSTC), which created a new Committee on Homeland and National Security to set help set R&D priorities in eight functional areas. OSTP’s interagency work has focused on such topics as anthrax, regulations to restrict access to research using biological “select agents,” access to “sensitive but unclassified” scientific information, policy for foreign student visas, access to “sensitive” courses, and advanced technology for border control. Pursuant to Executive Order 13231, OSTP was to work with the interagency President’s Critical Infrastructure Board to recommend priorities and budgets for information security R&D. The OHS had been created in the EOP on October 8, 2001 by Executive Order 13228. It was replaced by the new Homeland Security Council (HSC), created by P.L. 107-296, to provide policy and interagency guidance. It is unclear if the HSC Policy Coordination Committee on R&D, created pursuant to Executive Order 13228, still functions.

The working group on bioterrorism prevention, preparedness, and response, established by Section 108 of P.L. 107-188, the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, consists of the DHHS and DOD Secretaries and

other agency heads. One of its functions is to recommend “research on pathogens likely to be used in a biological threat or attack on the civilian population”

Table 2. Department of Homeland Security: R&D in the FY 2004 Budget
(budget authority in millions of dollars)

	FY 2003 Estimate	FY 2004 Request*	FY 2004 House Floor	FY2004 Senate Comm.
DHS R&D:				
Border & Transportation Security (TSA)	110	75	126	30
Emergency Preparedness	0	0	0	15
Information Analysis and Infra.	15	5	5	5
Science and Technology	521	803	900	866
<i>Biological countermeasures</i>	—	365	293	244
<i>Nuclear & Radiological countermeasures</i>	—	137	130	131
<i>Chemical ctrmeasures</i>	—	55	52	55
<i>High Explosives ctrmeasures</i>	—	10	10	10
<i>Threat & vulnerability assessments</i>	—	90	86	98
<i>Conventional missions</i>	—	55	112	64
<i>Rapid Prototyping / TSWG</i>	—	30	80	70
<i>Standards / state and local</i>	—	25	39	25
<i>Emerging threats</i>	—	22	21	22
<i>Critical infrastructure protection</i>	—	5	5	72
<i>University programs / HS fellowships</i>	—	10	35	55
<i>Salaries & expenses 1/</i>	—	0	39	not given
<i>Nat'l Biodef. Anly & Countermeasures 3/</i>	—	0	0	20
Coast Guard	23	23	23	0 2/
Total DHS R&D	669	907	1054	1001
<i>Selected non-R&D items: Biodefense countermeasures (BioShield)</i>	0	890	890	0
Total DHS Discretionary Budget	28875	28372	29411	28521
Source based on: AAAS <i>R&D Funding Update, DHS in FY2004 House Appropriations, June 25, 2003</i> . AAAS estimates based on FY 2004 appropriations bills. Includes conduct of R&D and R&D facilities. FY 2003 and FY 2004 request figures based on OMB R&D data and supplemental agency budget data. Figures are rounded to the nearest million. Changes calculated from unrounded figures. * FY 2004 request figures have been revised since the February 2003 release of the President's budget. 1/ The House Homeland Security would move salaries and expenses for federal employees in the S&T Directorate from program line items to a consolidated Salaries & Expenses account. 2/ The Senate bill would move CG R&D activities to the S&T Directorate under Conventional Missions. 3/Funded in Biological Counter- measures in FY2003, FY2004 request, and FY2004 House, but as a separate line item in FY2004 Senate bill. These figures reflect amendments on the House floor.				

Critiques Before Creation of the Department of Homeland Security.

Before passage of P.L. 107-296, some critics said that effective counterterrorism R&D required better coordination than OHS, OSTP, NSTC and other groups could provide, and that R&D priorities should reflect intelligence and threat estimates, and balance between long-range and short-term R&D to hasten deployment of technological responses. The Administration called for consolidating core R&D in a homeland security agency (in *National Strategy for Homeland Security*, July 2002). The National Academies advocated creating a Secretary for Technology and a homeland security “think tank” (in *Making the Nation Safer: The Role of Science and Technology in Countering Terrorism*, June 2002).

The Brookings Institution in *Assessing the Department of Homeland Security*, July 15, 2002, urged caution because homeland security R&D priorities were unclear.

Oversight Issues

Some DHS S&T activities were to be transferred to DHS by March 1, 2003, and others by June 1, 2003, according to the Administration's reorganization plan issued on November 25, 2002. Under Secretary McQueary noted, in a speech before the AAAS on April 11, 2003 and in congressional testimony, that DHS S&T priorities include intramural work in the National Laboratory for Homeland Security; soliciting innovative ideas from academia and industry via work in HSARPA; promoting standards for design and manufacture of homeland security technologies; participating with TSWG to support prototyping of new technologies; and strategic R&D partnerships with the academic community, including academic fellowships. Key DHS S&T initiatives focus on: border protection and monitoring (including prevention of illegal entry of nuclear devices), biological protection (including working with the Centers for Disease Control and Prevention to develop surveillance systems and to deploy sensors to monitor the release of pathogens and agents), and information analysis (including tools and cybersecurity research). It is unclear how DHS will set priorities for its support agencies, including HSARPA, the university center(s), the Homeland Security Institute, and laboratories.

Coordination of federal homeland security R&D may be an issue. DHS's FY2004 R&D budget request includes about \$800 million for new programs and \$200 million for transferred programs, this is one-third of the budget request for R&D to combat terrorism. DHS has some authority to coordinate and help set priorities for other federal homeland security R&D, including in human health. The extent of that responsibility remains to be demonstrated. The heads of other agencies that handle R&D have no formal role in DHS's R&D priority-setting and coordination, and the role of the DHS Secretary in setting priorities for those agencies is undetermined. DHS's effectiveness in planning and coordinating R&D may depend upon the Secretary's ability to exert influence on other agencies and his interactions with existing counterterrorism coordination mechanisms in OSTP, NSTC, and interagency committees. There is the issue of whether DHS scientists will be housed together or will remain separate and operate essentially as a "virtual group." Physical proximity may promote mission effectiveness, but has the potential to separate DHS scientists from their counterparts and the possibility of distorting scientific communication, which many say is essential to progress.

There are also issues of how Congress will conduct oversight of the DHS's multifaceted R&D activities, and the level of appropriations that will be made available to fund the authorized programs.

In response to criticism of P.L. 107-296, legislation was enacted (P.L. 108-7), to revise eligibility criteria so that more institutions can compete for funding for DHS's academic-based homeland security center(s). The Subcommittee on Cybersecurity, Science, and Research & Development of the House Select Committee on Homeland Security held an oversight hearing on "Homeland Security Science and Technology: Preparing for the Future," on May 21, 2003. Additional hearings are scheduled.